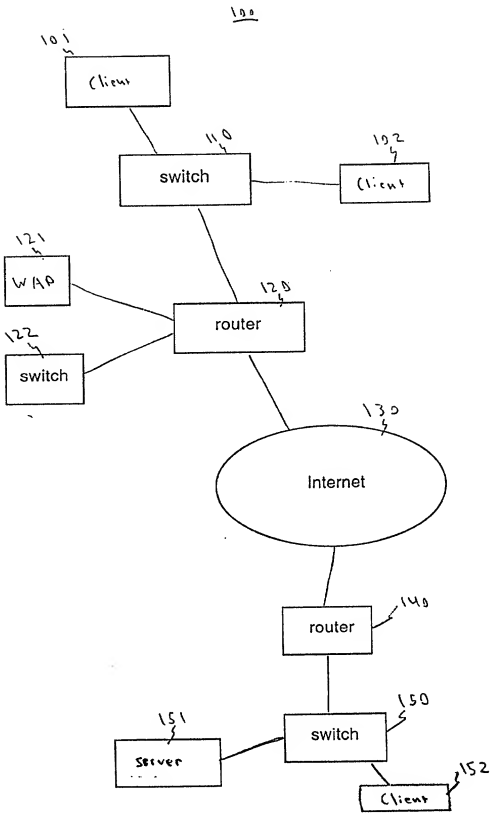
100
101
Client
110
switch
102
Client
121
WAP
120
router
122
switch
130
Internet
140
router
150
switch
151
Server
152
Client

FIG. 1

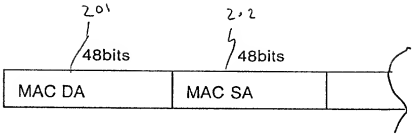
201
202
48bits
48bits
MAC DA
MAC SA

FIG. 2

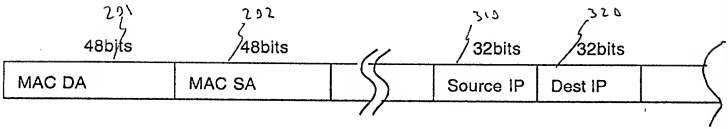
201
202
310
320
48bits
48bits
32bits
32bits
MAC DA
MAC SA
Source IP
Dest IP

FIG. 3

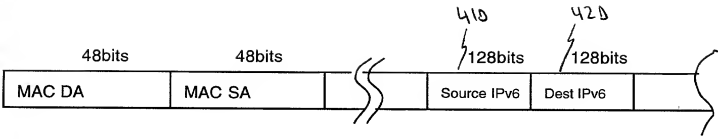
410
420
48bits
48bits
128bits
128bits
MAC DA
MAC SA
Source IPv6
Dest IPv6

FIG. 4

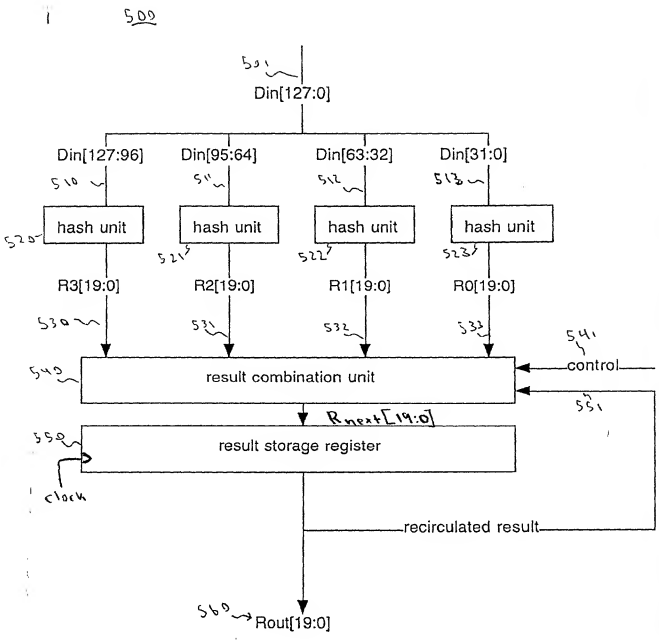
500
501
Din[127:0]
Din[127:96]
Din[95:64]
Din[63:32]
Din[31:0]
510
511
512
513
hash unit
hash unit
hash unit
hash unit
520
521
522
523
R3[19:0]
R2[19:0]
R1[19:0]
R0[19:0]
530
531
532
533
541
control
540
result combination unit
551
Rnext[19:0]
550
result storage register
clock
recirculated result
560
Rout[19:0]

FIG. 5

```
if (control == 0)
   {
   Rnext = R3 XOR R2 XOR R1 XOR R0;
   }
else
   {
   Rnext = R3 XOR R2 XOR R1 XOR R0 XOR Rout;
   }
```

Rout <= Rnext on each positive clock edge

FIG. 6

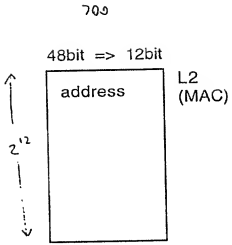

FIG. 7

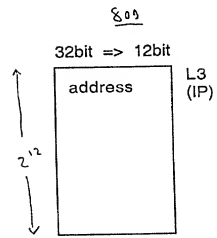

FIG. 8

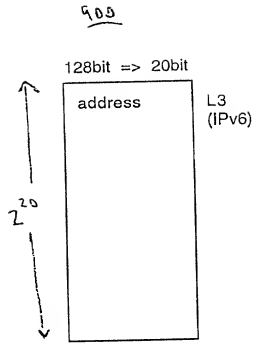

FIG. 9

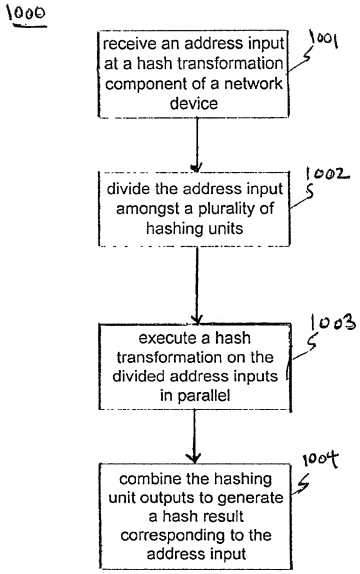
1000
receive an address input at a hash transformation component of a network device
1001
divide the address input amongst a plurality of hashing units
1002
execute a hash transformation on the divided address inputs in parallel
1003
combine the hashing unit outputs to generate a hash result corresponding to the address input
1004

FIG. 10